2. Introduction

Tobacco use is responsible for considerable number of morbidity and mortality in the world. It is one of the most important preventable risk factor of most non-communicable diseases. The tobacco smoke contains more than 4000 substances that are detrimental to health. Among these 4000 substances at least 43 are carcinogenic. At present, World Health Organization (WHO) estimates 1.1 billion smokers in the world today; the number is expected to rise to 1.64 billion by the year 2025. About 4.9 million people die each year from tobacco use. If the current trends continue, this figure will reach more than 10 million by the early 2030s, with over 70 percent of those deaths occurring in developing countries. Based on current smoking trends, tobacco will soon become the leading cause of death worldwide, causing more deaths than HIV/AIDS, maternal mortality, automobile accidents, homicide and suicide combined.

Given the top priority to the tobacco program, WHO Director General, established a Cabinet project, the Tobacco Free Initiative (TFI) in July 1998 to coordinate an improved global strategic response to tobacco as an important public health issue. The long term vision of global tobacco control is to reduce smoking prevalence and tobacco consumption in all countries and among all groups, and thereby reducing the burden of disease caused by tobacco in the world.

Tobacco use in Nepal

A study done in different ecological regions of Nepal indicated that prevalence of tobacco use in adults was 68.4% in rural Kathmandu, 37.0% in urban Kathamandu, 54.7% in Tarai region and 77.7% in mountain region[1]. It was interesting to note that in the mountain region, the female smoking rate was 71.6%, which is one of the highest reported in the world. Another small cross-sectional community survey of 1157 young individuals aged 10-19 years, done in 1987 showed an overall prevalence of daily smokers to be 12.1%. This survey showed that major deterrent factors were parental attitudes and peer pressure against smoking in the school atmosphere[2]. Recently conducted national survey on tobacco economics[3] showed that smoking rate increases with age; among the 16-19 years old it was about 30%. It was unveiled that the household share of expenditure on tobacco product is more than 3.5%.

Another cross sectional survey of students of grade 4-9 was recently conducted in a private school of Kathmandu. 47% of the students were of the age group 13-15 years. In contrary to the findings from other studies, the prevalence of tobacco use in this particular study was quite high. Regular smokers (smoking at least one cigarette per day) was 7.8%. The percentage of students using tobacco in forms other than smoking was 42.4% (n=924, coverage rate 95%). However, this included the students using these products daily and occasionally as well as only during festivals. A substantial portion of the occasional smokers (57.2%) expressed their wish to quit smoking[4].

The recently published Global Youth Tobacco Survey (GYTS) report on Tobacco Use among Youth: A Cross Country Comparison revealed that 186 million populations were estimated to be in the age group 13-15 out of the world population of 6.2 billion. The GYTS studies covers 140 countries around the world, including Nepal. Out of the 186 million, 34.8 million were estimated to be currently using some form of tobacco and 25.8 million were currently smoking cigarettes. The use of any form of tobacco by 13-15 year old students was found to be more than 10%. Current smokers in this age group was less than 10% around the world [5,6].

Nepal has very high prevalence rate of chronic obstructive lung disease (COLD) varying from 20-40% in persons above the age of twenty years. This was found to be significantly associated with tobacco smoking[1,7]. Acute respiratory infection is the second biggest killer of infants and children in Nepal and positive correlation between tobacco smoking by parents and ARI in infants have been shown in a study conducted in Nepal[8]. Tobacco smoking has also been found to be associated with coronary artery disease in a hospital-based study in Nepal[9]. This disease is rapidly increasing in Nepal and South Asia and has been projected to reach epidemic proportion in the near future unless immediate primary prevention measures with special emphasis to anti tobacco campaign are taken.

3. Objectives

The GYTS is a school-based tobacco specific global survey, which focuses on adolescents of age 13-15 years and corresponding grade. It establishes the prevalence of tobacco use status of school going students in a country, assess knowledge, attitude and behavior related to tobacco use and exposure to environmental tobacco smoke (ETS) etc. It also assesses students' exposure to pro-tobacco and anti tobacco activities in a country. The objective of GYTS is two folds:

- To find out the magnitude and extent of tobacco use among school students with special focus to 13-15 years age group and to monitor the change over years.
- To assess and better understand the level of exposure to pro-tobacco and anti-tobacco activities and corresponding knowledge and attitudes of students regarding tobacco use so as to plan and implement effective anti-tobacco program in a country.

This report, like GYTS in other countries, will attempt to unveil the following issues related to tobacco use in Nepal:

- Determine the magnitude and extent of tobacco use by school students
- Assess students knowledge and attitude regarding tobacco use
- Find out the level of exposure of school students to pro-tobacco activities such as media / advertisement, access and availability
- Assess students' exposure to environmental tobacco smoke and cessation efforts
- Assessment of anti-tobacco instructional activities in school

4. Methodology:

Because of insurgency mainly in hilly and mountainous, western and eastern region of Nepal, it was decided to do the first stage of the survey in the central region for logistic reasons and convenience. This region includes the capital Kathmandu valley with most populated schools and students. After completing this, it was planned to do study in other parts of Nepal to get a more representative data.

4.1. Study design and sampling technique:

The GYTS is a cross-sectional survey of school students of grades 8 to 10 carried out in mid-2001. A two-stage cluster sample design was used to produce representative data for the central development region of Nepal. At the first stage, schools were selected with probability proportional to enrollment size. At the second stage, classes were randomly selected and all students in selected classes were eligible to participate. For this purpose, the enrollment data of secondary school student of grades 8 to 10 corresponding to age 13 to 15 in the central development region (CDR) of Nepal was collected from the record of the Central Region Educational Directorate, Ministry of Education for the year 1999. The CDR covers 19 districts that lie in different ecological zones, such as: mountain, hill and terai (plain). The

enrollment data was forwarded to the Office of Smoking and Health (OSH), Center of Diseases Control (CDC) to draw up study sample for survey under Phase I. Fifty schools out of 1,035 schools in the CDR were selected for the survey. All schools containing standards 8 through 10 that contained 40 or more students were included in the sampling frame.

School level: The first stage-sampling frame consisted of all public and private schools containing of any grades 8 through 10. Schools were selected with probability proportional to school enrollment size.

Class level: The second sampling stage consisted of systematic equal probability sampling (with a random start) of classes from each school that participated in the survey. All second period classes in the selected schools were included in the sampling frame. All students in the selected classes were eligible to participate in the survey.

4.2. Development of questionnaire

Prior to developing our questionnaire, Hindi version of the questionnaire already used by the neighboring country India was reviewed. The questionnaire was developed under the guidance of WHO and CDC, which comprised core component that provided similar data for the comparison between countries and regions and a set of optional component that provided data to analyze the special issues relevant to the Nepalese situation. Prior approval was taken from CDC and WHO. The approved questionnaire was translated into Nepali language with the help of experts and then pre-tested.

A weighting factor was applied to each questionnaire to reflect the likelihood of sampling each student and reduce bias by compensating for different patterns of non-response.

The weight used for estimation is given by:

W = W1 * W2 * f1 * f2 * f3 *f4

W1 = the inverse of the probability of selecting the school

W2 = the inverse of the probability of selecting the classroom within the school

f1= a school-level non-response adjustment factor calculated by school size category (small, medium, large)

f2 = a class adjustment factor calculated by school

f3 = a student-level non-response adjustment factor calculated by class

f4 = a post stratification adjustment factor calculated by gender and grade

5. Data Collection and analysis:

Printed questionnaires both in Nepali and English along with School ID forms and Class level ID forms were made available to the data enumerators or surveyors. A letter was sent to all selected schools for their consent to undertake the survey. The purpose of the survey was discussed with the school authorities and the classes were selected as per school level form. After selection of class, the anonymous self-administered questionnaire was administered with due explanation of the nature and the intent of the survey. The teachers and school personnel were not present during administration of the questionnaire to encourage the students to provide their own answer without any biases. The survey was carried out from April to September 2001.

The answer sheet was sent to CDC/OSH where data was entered and analysis was done using Epi Info 2000, a software package, that accounted for the complex sampling design and weighing factors in the data set, to calculate standard errors and prevalence estimates. The statistical differences included in this report were determined by comparing the range of the 95% confidence interval (95%CI) for the estimates. If the ranges for the 95% CI did not overlap then the difference were statistically significant. The weighted results were used to make important inferences concerning tobacco use risk behaviors of students in eighth, ninth and tenth grades. The following response rate was obtained in the study:

Schools: 98% 49 of the 50 sampled schools participated.
Students: 86% 2,307 of the 2,687 sampled students completed usable questionnaires
Overall response rate: 98% *85.86% = 84.14%

6. Results:

Table 1: Percent of students who use tobacco, Nepal GYTS, 2000

Category	Ever Used Tobacco in any form even once	Current Use					
		Any tobacco Product	Any Smoked Product	Smokeless Products	Cigarette	bidi	Gutkha/ Pan masala
Total	16.3 (±4.2)	11.6 (±3.1)	7.2 (±2.6)	9.3 (±2.5)	4.1 (±1.4)	2.0 (±0.8)	6.6 (±2.0)
Sex							
Male	22.5 (±4.7)	15.3 (±3.7)	9.9 (±3.2)	11.8 (±2.8)	6.3 (±2.2)	2.8 (±1.3)	9.0 (±2.5)
Female	7.9 (±4.4)	6.4 (±3.6)	3.2 (±2.8)	5.6 (±3.5)	0.6 (±0.4)	0.6 (±0.6)	2.9 (±2.1)

Overall 16.3 percent of the student ever used tobacco product in any form (table 1), the boys were significantly higher than girls. Percentage, of current users of any form of tobacco product is 11.6 percent, however the rate in the boys was significantly higher (15.3%) as compared to girls (6.4%). Use of smokeless tobacco product was slightly greater than use of smoking product but the difference is insignificant. The overall percentage of cigarette smokers was 4.1, boys 6.3 % and girls 0.6 %, the difference is statistically significant.

Table 2: School Curriculum, Nepal GYTS, 2000

Category	Percent taught dangers of smoking or chewing tobacco	Percent discussed reasons why people their age smoke or chew	Percent taught the effects of tobacco use in class	Percent discussed tobacco and health as part of a lesson in class
Total	77.7 (± 4.0)	55.0 (±3.8)	74.4 (±3.0)	74.3 (±3.5)
Sex				
Male	74.5 (±4.9)	50.1 (±4.3)	69.8 (±4.2)	69.9 (±4.2)
Female	82.2 (±3.7)	61.5 (±4.8)	80.4 (±3.2)	80.5 (±3.8)

About three fourth (77.7%) of the students were taught about the danger of smoking, its effect and discussed tobacco and health as a part of lession in the class (Table 2). About half of them (55%) also discussed reasons why people of their age smoke or chew which is significantly different between the boys (50.1%) and girls (61.5 %).